

Serial No.: 10/589,046
Filed: August 10, 2006
First Named Inventor: Keith M. Small
Group Art Unit: 4152

REMARKS

Claim amendments

Claims 1-28 are pending.

Independent claims 1, 12, 15 and 26 have been amended for clarification by reciting in the body of the claims the features of the network that are originally recited in the preamble of the claims.

Claim 3 has been amended to recite that the address assignment handler assigns to the client an IP address that is associated with the information of the one or more network elements through which the client is route. Similar amendments have been made to claims 14 and 17. Support for these amendments can be found in the application as originally filed, e.g., page 15, line 5 to page 16, line 30 of the specification.

Claim 5 has been amended to recite that the location resolution handler is a SNMP daemon that resolves the location of the client based on the client IP address assigned by the address assignment handler. Similar amendments have been made to claim 19. Support for these amendments can be found in the application as originally filed, e.g., page 20, lines 22-26 of the specification.

Claims 7 and 21 have been amended to change "relay modules" to "DHCP relay modules". Support for these amendments can be found in the application as originally filed, e.g., page 18, lines 1-9 of the specification.

Claim 13 has been amended by adding a period at the end.

Claims 27 and 28 have been cancelled.

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No new matter has been introduced into the application by these amendments.

Claim Objections

The Examiner has objected to claim 28 with regard to a grammatical error.

Claim 28 has been cancelled.

Rejection under 35 USC §101

The Examiner has rejected claims 27 and 28 under 35 U.S.C. 101, alleging that these are non-statutory subject matter.

Claims 27 and 28 have been cancelled without prejudice in order to expedite the prosecution of the application.

Rejection under 35 USC §102

The Examiner has rejected claims 1-11 and 15-26 under 35 U.S.C. 102, alleging that these claims are anticipated by Wilson (Pub. No. US 2001/0054101 A1, hereinafter "Wilson").

Applicants respectfully request reconsideration of the rejection for the reasons set out below based on the amended claims.

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Claim 1

Claim 1 provides a network service management server for managing network services for an internal network. The server comprises a registration driver, an address assignment handler and an information handler. The registration driver registers a client connecting to one of network entities of the internal network operated by a multi-system operator. The address assignment handler assigns to the client an address associated with the one of the network entities to which the client is connected. The information handler handles information relating to network services for the client based on the assigned address. Since the assigned address is associated with the network entity to which the client is connected, the address is assigned according to the entity's location on the internal network. Thus, the assigned address is associated with the client's position within the network.

In contrast, Wilson does not teach a network service management system as recited in claim 1.

Wilson teaches assignment of an IP address to a client. However, in Wilson, an IP address is assigned from available IP addresses in the address ranges and assigned to each new MAC address as it is encountered (paragraph [0070]). Wilson does not assign an address that is associated with a network entity to which the client is connected. Wilson does not teach or suggest assigning an address according to the entity's location on the network.

The Examiner referred to the descriptions in Wilson, e.g., paragraph [0007], lines 4-7; paragraph [0027], lines 10-12; and paragraph [0027], lines 1-4. These descriptions relate to a low-level NAT function, which translates from an entity's actual fixed IP address to its assigned IP address. This low-level NAT function is common to both the Wilson and the present application. However, this is

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independent of the address assignment by the address assignment handler of claim 1 of the present invention, which assigns an address associated with the one of the network entities to which the client is connected.

The low-level NAT function can be understood from the following simple example in which an internal network has two routers and three bridges and users U1-U5 are connected to those network elements:

Server--Router 1(actual address X) – Routed User U1
--Router 2 (actual address Y) – Routed User U2
--Bridge 1 – Bridged User U3
--Bridge 2 – Bridged User U4
--Bridge 3 – Bridged User U5

Since bridges do not alter received traffic, the server receives unaltered traffic from users U3, U4, and U5. If users U3, U4, and U5 all possess static IP addresses, traffic to and from users U3, U4, and U5 need to be NATted from and to the server assigned IP address by the low-level NAT function.

If users U1 and U2 possess static addresses which fall within the subnetworks which are routed by their respective routers, or if users U1 and U2 obtain their IP addresses from a third-party DHCP server, then the server sees packets from users U1 and U2 which possess those users' own IP addresses which have not been assigned by the server's DHCP server, even though the routers alter the packet's MAC addresses. However, the properly configured server possess assignable address ranges which correspond to the router's routed ranges, so that users U1 and U2 are assigned by the server their own IP addresses. Here, the assigned IP address is always the same as the original IP address for a routed client. Thus, the low-level NAT function never be required for communication with users U1 and U2.

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Accordingly, in any cases, the low-level NAT function is not involved in address assignment. It only translates between a registration driver entry's assigned IP address and that entry's original IP address, if those two addresses differ. This low-level NAT function does not correspond to the address assignment handler as defined in claim 1 of the present application, which assigns an address associated with the one of the network entities to which the client is connected.

Therefore, Wilson fails to teach or suggest an address assignment handler as recited in claim 1 of the present application. Thus, Applicants respectfully submit that claim 1 as amended has been patentably distinguished over Wilson.

Claim 2

Claim 2 depends on claim 1 and thus, claim 2 is also patentably distinguished over Wilson for the same reason stated above.

Claim 3

Claim 3 depends on claim 1 and thus, claim 3 is also patentably distinguished over Wilson for the same reason stated above.

In addition, amended claim 3 recites that the address assignment handler assigns to the client an IP address that is associated with the information of the one or more network elements through which the client is routed. Thus, the address assignment handler of amended claim 3 provides router-aware IP address assignment.

Wilson does not teach or suggest such router-aware IP address assignment.

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Accordingly, it is respectfully submitted that amended claim 3 is patentable over Wilson.

Claims 4 -9 and 11

Claim 4 depends on claim 1 and claims 5-9 and 11 depend directly or indirectly on claim 4. Accordingly, claims 4-9 and 11 are also patentably distinguished over Wilson.

Especially, amended claim 5 recites that the location resolution handler is a SNMP daemon that resolves the location of the client based on the client IP address assigned by the address assignment handler. Wilson's ARP protocol described in paragraphs [0058] and [0060] is different from the location resolution handler of claim 5, which performs SNMP-based location-for-IP address resolution.

Also, claim 6 recites that the address assignment handler assigns to the client an address that includes information of one or more routing devices that the client traffic is routed. In paragraph 0027, Wilson mentions that [client traffic] that can be "properly routed to and from the client". However, this routing is being performed by Wilson's server, which is a router connecting a LAN to a WAN. The server of claim 6 handles the client traffic that is routed by routing devices. Wilson does not mention that routers can be usefully supported when they are the network elements of the LAN of his server. Wilson does not teach or suggest a router-aware IP address assignment as recited in claim 6.

Amended claim 7 recites that the address assignment handler assigns to the client an address that reflects information of one or more DHCP relay modules through which the client traffic passes. Wilson does not teach such address assignment that reflects information of DHCP relay modules.

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Claim 8 recites that the address assignment handler assigns to the client an address that reflects information of bridged network entities through which the client traffic passes. Wilson does not teach such address assignment.

Accordingly, it is respectfully submitted that these claims are patentable over Wilson.

Claim 10

Claim 10 depends on claim 1 and thus, claim 10 is also patentably distinguished over Wilson.

Claims 15-26

Claims 15-26 are method claims corresponding to server claims 1-11. Accordingly, for the same reasons as discussed above in relation to claims 1-11, claims 15-26 are also patentably distinguished over Wilson.

Therefore, it is respectfully submitted that claims 1-11 and 15-26 are patentable over Wilson.

Rejection under 35 USC §103

The Examiner has rejected claims 12-14 under 35 U.S.C. 103, alleging that these claims are unpatentable over Wilson in view of Ferreria et al. (Patent No. US 6,857,009 B1, hereinafter "Ferreria").

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Applicants respectfully request reconsideration of the rejection for the reasons set out below based on the amended claims.

Claim 12 corresponds to claim 1 and recites a network service management server for managing Internet services for a cable modem network. As the Examiner has indicated, Wilson does not disclose a cable model networking having multiple cable modems and CMTSs for communicating with connected cable modems. In addition, Wilson does not teach or suggest an address assignment handler for assigning to the client a client address associated with the one of the cable modems to which the client is connected.

Ferreria discloses the incorporation of his invention into a CMTS network. However, Ferreria's system does not communicate with modems. It is clearly stated in Ferreria that the entities which the system serves are "subscribers" (column 7, line 21), which must explicitly create new user accounts (column 9, lines 17-30), and which must explicitly log into existing user accounts (Figure 6, blocks 222, 224, 230, 226). Cable modems cannot input data into account creation and account login screens. Thus, it is difficult to see how Ferreria's system can serve cable modems, or know how to query cable modems. Those skilled in the art understand upon reading Ferreria that Ferreria's system cannot communicate with modems.

Also, Ferreria bases its packet processing upon packet source MAC addresses (Figure 6, block 202, column 8, lines 41-45, and column 9, lines 17-20). Ferreria also fails to teach or suggest assignment of an address to the client a client address associated with the one of the cable modems to which the client is connected. Thus, Ferreria cannot properly handle routed client traffic as routers alter routed packets' source MAC addresses.

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Neither Wilson nor Ferreria teach or suggest communicating with cable modems, or assignment of an address to the client a client address associated with the one of the cable modems to which the client is connected.

Accordingly, even if one skilled in the art attempts to combine Wilson and Ferreria, he would still fail to achieve the server as recited in claim 12 of the present application.

Therefore, claim 12 has been patentably distinguished over Wilson and Ferreria.

Claim 13

Claim 13 depends on claim 12 and thus, claim 13 is also patentably distinguished over Wilson and Ferreria for the same reason stated above.

Claim 14

Claim 14 depends on claim 12 and thus, claim 14 is also patentably distinguished over Wilson and Ferreria for the same reason stated above.

In addition, amended claim 14 recites that the address assignment handler assigns to the client an IP address that is associated with the information of the CMTS to which the client is connected. The address assignment handler of amended claim 14 can provide CMTS-aware, i.e., router-aware IP address assignment.

Neither Wilson nor Ferreria teach or suggest such a router-aware IP address assignment.

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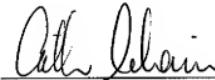
Accordingly, it is respectfully submitted that amended claim 14 is patentable over Wilson and Ferreria.

Conclusion

Applicants respectfully submit that the present invention as recited in claims 1-26 as amended has been patentably distinguished over the references on record.

Early and favorable reconsideration of the application is respectfully requested.

Respectfully submitted,



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